Restoration Advisory Board Meeting - 16 January 2002

Naval Station Norfolk
Installation Restoration Program

09.04- 1/16/02-00862

RAB Meeting Agenda

TOPIC	SPEAKER
Welcome & Introduction	John Ballinger- Regional Environmental Group
Status Of NAVSTA IR Program	John Tomik - CH2MHILL
Site-22 Camp Allen Salvage Yard	Don Joiner - Baker Environmental
Camp Allen Landfill Monitoring	John Tomik - CH2MHILL
Q-50 Accumulation Area	John Tomik - CH2MHILL
Comments/Announcements Of future meeting	John Ballinger- Regional Environmental Group
Closing Remarks	

Naval Station Norfolk
General Background

- Began Operation in 1917 to Support WWI
- Expanded Between 1940 & 1945 to Support WWII
- Worlds Largest Naval Installation (4,631 acres)
  - 4000 Buildings
  - 20 piers
  - One airfield
- Mission: To Provide Fleet Support and Readiness for the Atlantic Fleet

Naval Station Norfolk

Status of Installation Restoration Program

Naval Station Norfolk

Naval Station Norfolk
IR Program

- National Priorities List (NPL) - 4/97
- Federal Facilities Agreement (FFA) - 2/99
  - 170 Sites Investigated
    - 18 IR sites (10 clean up Req'd; 8 Institutional Controls)
    - 5 Site Screening Areas (5 SSAs)
    - 15 Areas of Concern (AOCs)
    - 132 Sites require No Further Action (NFA)
- Currently Partnering with EPA & VDEQ

Naval Station Norfolk Partnering Team members

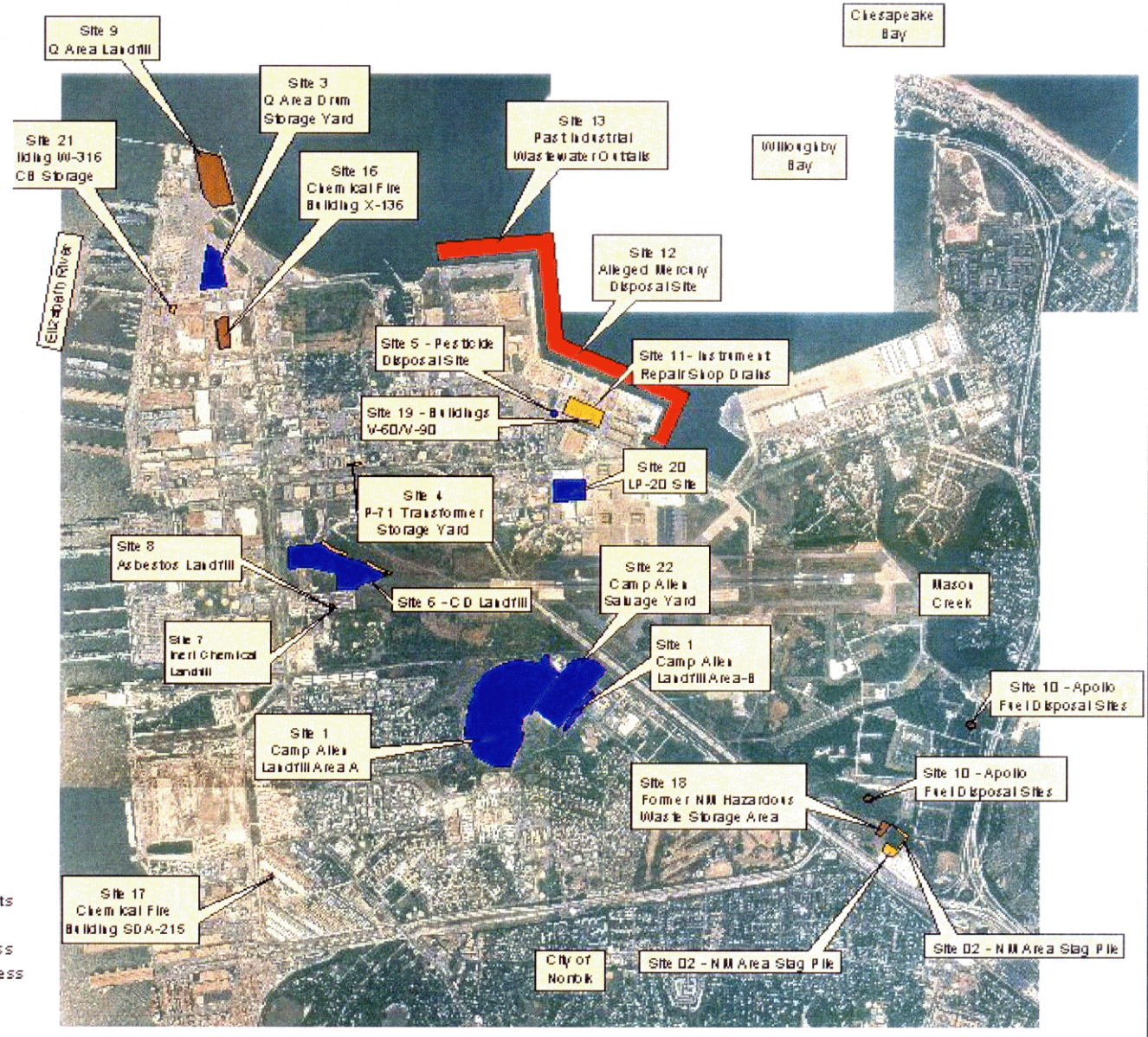
- Randy Sawyer, Navy Regional Engineering
- Winoma Johnson, LANTDIV
- Mary Cooke, USEPA
- Devlin Harris, VDEQ
- John Tomik, CH2MHILL
- Don Joiner, Baker Environmental

Naval Station Norfolk
IR Program

- Significant Accomplishments
  - 15 sites have been closed out through either remediation or Risk Assessment/Closeout reports since 1998
  - Of the 170 sites identified, only eight additional sites will require further investigation
  - Innovative remediation technologies have included: air sparging, vapor extraction, dual phase extraction
  - Use of on-site soils at CD Landfill remediation has resulted in savings of over $300,000
  - Partnering with the regulators has reduced remediation costs by over $3M and reduced the cleanup time by over 3 years

Naval Station Norfolk

Status of IR Sites

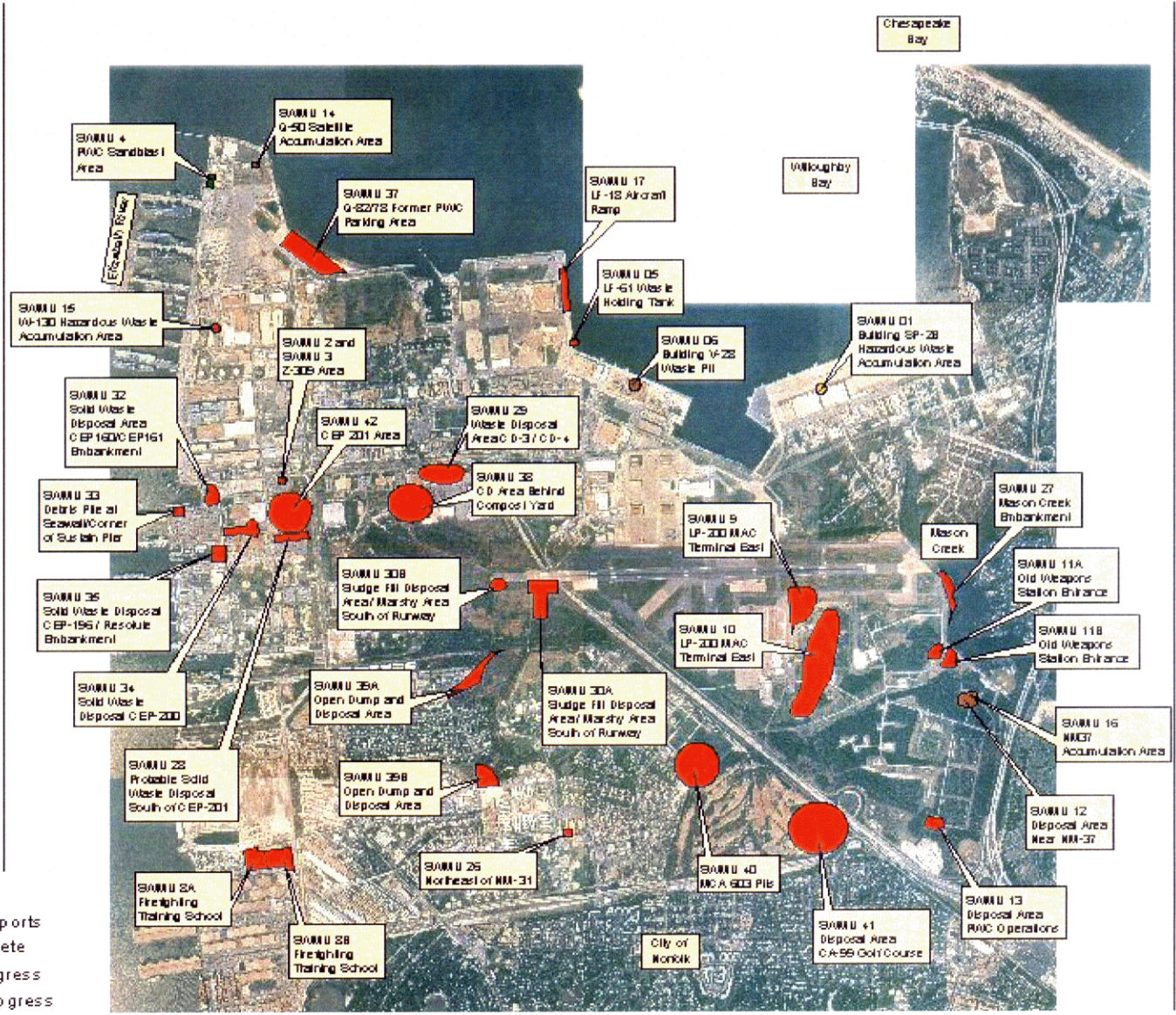


LEGEND

- NFA Sites Per FFA Close-out Reports
- Remedial/Removal Action Complete
- Remedial/Removal Action in Progress
- Remedial/Site Investigation in Progress
- To Be Determined

Naval Station Norfolk

Status of SWMU Sites



LEGEND

- NFA Sites Per FFA Close-out Reports
- Remedial/Removal Action Complete
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- Remedial/Site Investigation in Progress
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FY 2001 Accomplishments

- Record Of Decision For Slag Pile (Site 2) signed by EPA
- Camp Allen Salvage Yard - Draft FS, Draft PRAP
- Ten sites investigated/closed out
  - Site 5- Pesticide Disposal site
  - FFA Sites 7,8,12, 17
  - SWMU 8 Firefighting Site
  - SWMU 09- MAC Terminal West
  - SWMU 10- MAC Terminal East

FY 2001 Accomplishments (cont)

- Ten sites investigated/closed out (Cont.)
  - SWMU 38 CD Area Behind compost Yard
  - SWMU 39 Suspected Open dump
- Streamlined Risk assessments initiated at SWMUs 12&16
- Investigations completed at Sites 10, 16, 18;SWMU 14

CD Landfill Remediation

- 20 acre site used for disposal of demolition debris, fly ash, grit
- Operated from 1974-1987
- Landfill cap installed in 1999
- Use of NSN fill resulted in savings of over $300,000
- Post-closure monitoring is ongoing

Site 2 NM Slag Pile Sediment Removal

- Disposal area for slag from aluminum smelting in 1950s
- Remedial Investigation completed in 1998 detected elevated lead
- Sediments removed in November 1999
- Slag pile paved over to reduce exposure and re-use as parking area

Site 2 NM Slag Pile Paved Area

FY 2001 Accomplishments (cont)

- Completed First Year Post Closure Monitoring at CD Landfill
- Completed Annual monitoring/modeling at Camp Allen Landfill
- Initiated Remediation Optimization strategies for CALF, LP-20, Q Area.

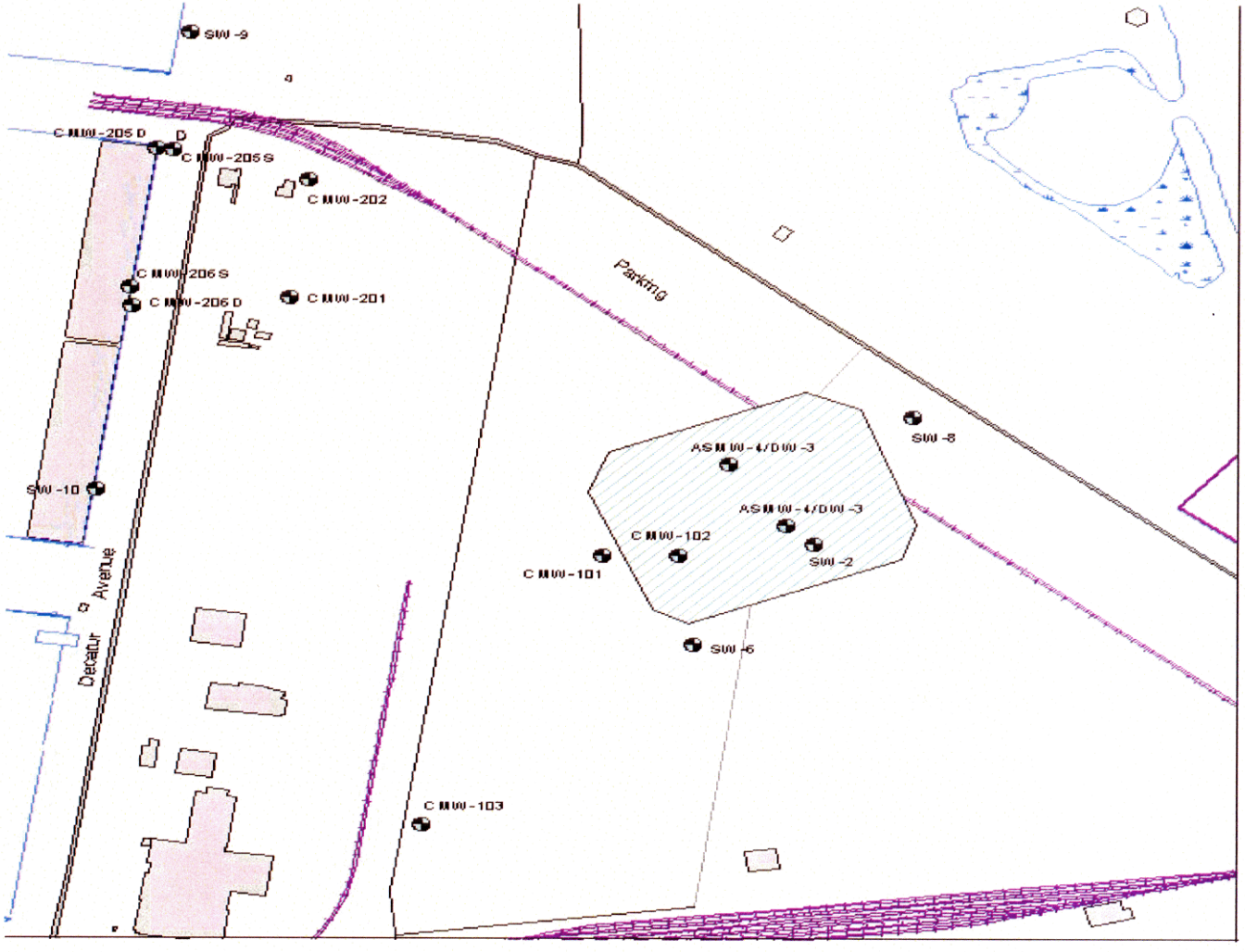
FY 2002 Goals

- Finalize ROD and remediation at Camp Allen Salvage Yard (Site 22)
- Complete Remedial Investigation at Q -50 Satellite Accumulation area (SWMU 14/Site 9)
- Develop Close-Out Strategy for Site 3 (Q area
- Continue Remediation Optimization Strategies for CALF (Site 1), Q Area (Site 3) and LP 20 (Site 20)
- Complete Investigations at IR Sites 16 & 18

FY 2002 Goals (Cont.)

- Develop Sampling Plan for Bousch Creek
- Complete natural attenuation monitoring at SWMU 6
- Complete 2nd year Post-Closure monitoring at CD Landfill
- Complete Streamlined Risk assessments at SWMUs 12 & 16
- Conduct 5-Year Review Report for remediated sites.

Site 3- Q Area Drum Storage Site



IR Site 3- Q Area Drum Storage
Background

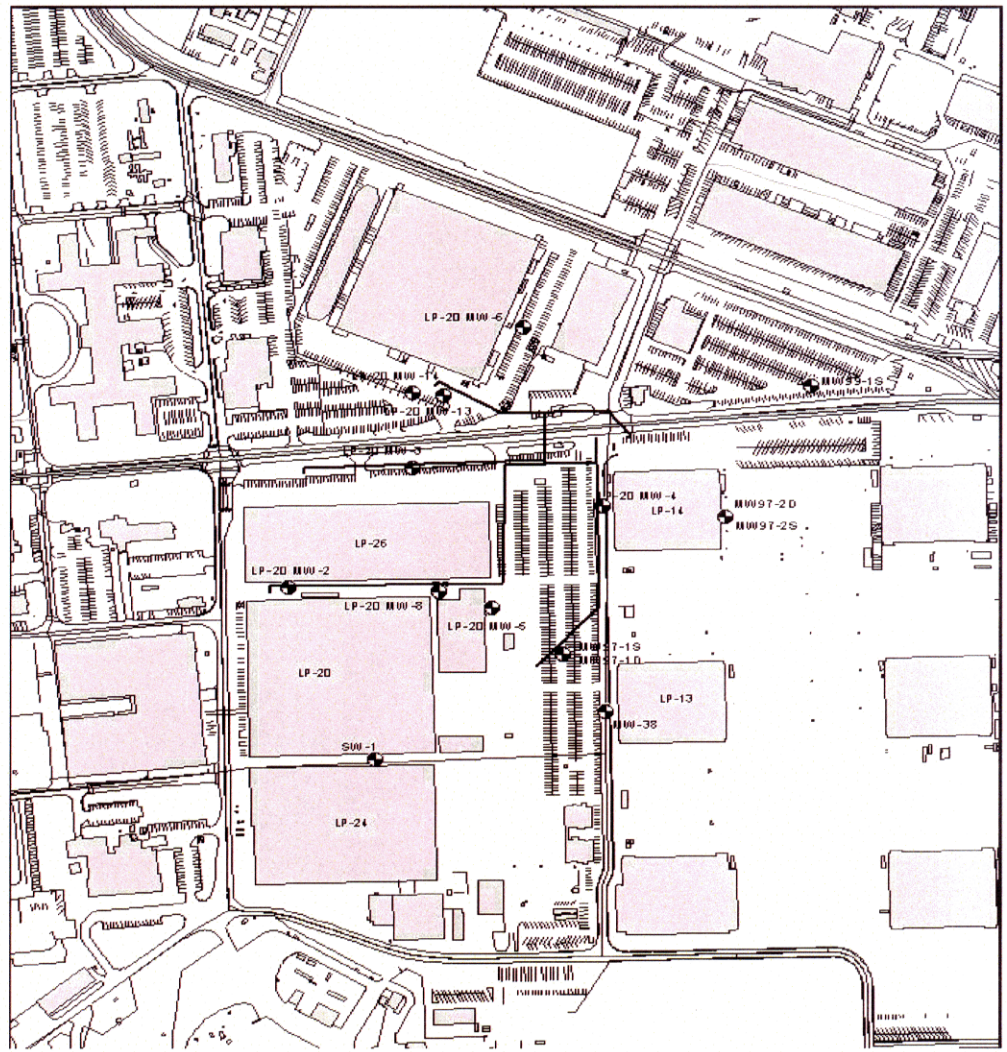
- 5 Acre site located near Carrier Piers created by dredging in 1950's
- Site used to store drums containing petroleum products, paints, solvents pesticides from 1950-1980's
- RI/FS Completed 1996
- Soils contaminated with petroleum products, VOC's and pesticides.
- Groundwater contaminated with VOC's

IR Site 3- Q Area Drum Storage

IR Status

- Decision Document Signed November 1996
- Remediation by air sparging and soil vapor extraction
- Pilot Treatability Study performed and system construction completed in August 1998
- Semi annual monitoring of 15 wells for VOCs
- Significant VOC Reduction is Occurring- (25-75% at wells within the plume)
- One part of the site (AOC-1)will be considered for close-out in 2002

Site 20- LP-20 Building



IR Site 20- LP-20 Building
Background

- Building used for aircraft engine maintenance and metal plating operations
- Preliminary Assessment/Site Inspection completed in 1991 detected chlorinated solvents in groundwater
- RI/FS Completed 1996
- Groundwater contaminated with VOC's
- Air sparging/vapor extraction groundwater remediation system started in April, 1998

IR Site 20- LP-20 Building

IR Status

- Decision Document signed November 1996
- Remediation by air sparging and soil vapor extraction
- Pilot Treatability Study performed and system began operational in April 1998
- Annual monitoring of 15 wells for VOCs
- VOCs reduced below cleanup goals at 6 wells, reduced by 25-50% at 2 wells, pulse pumping initiated

Project Status

Site 22
Camp Allen Salvage Yard

Naval Station Norfolk

16 January 2002

Presentation Goals

- Salvage Yard History
- Salvage Yard Progress
- Description of Soils Non-Time-Critical Action
- Other Progress
- Site status, schedule for completion
- Opportunities for community involvement

Camp Allen Salvage Yard History

- Used for salvaging and scrap material handling for over 50 years
- Included drum, transformer, and lead storage areas
- All old structures and storage areas now removed
- 22 acres of barren, level ground

CASY Remedial Timeline

- 1982 - Initial Assessment Study
  - Identified CASY as a potential area of concern
- 1993 - Preliminary Assessment/Site Inspection
  - Reviewed historical information, limited field effort
  - CASY added to list of sites of concern

- 1996 - Remedial Investigation/ Feasibility Study
  - Characterized nature and extent of contamination
    - Identified PCBs, antimony,arsenic, iron and lead as contaminants of concern
  - Included Human Health Risk Assessment
  - Proposed cleanup actions

CASY Remedial Timeline

- 1997 - Naval Station Norfolk listed on NPL
- 1998 - PCB Removal Action
  - 2,700 cubic yards of soil removed from southern portion of site
- 1999 - Federal Facilities Agreement signed
- 1999 - Remedial Investigation completed

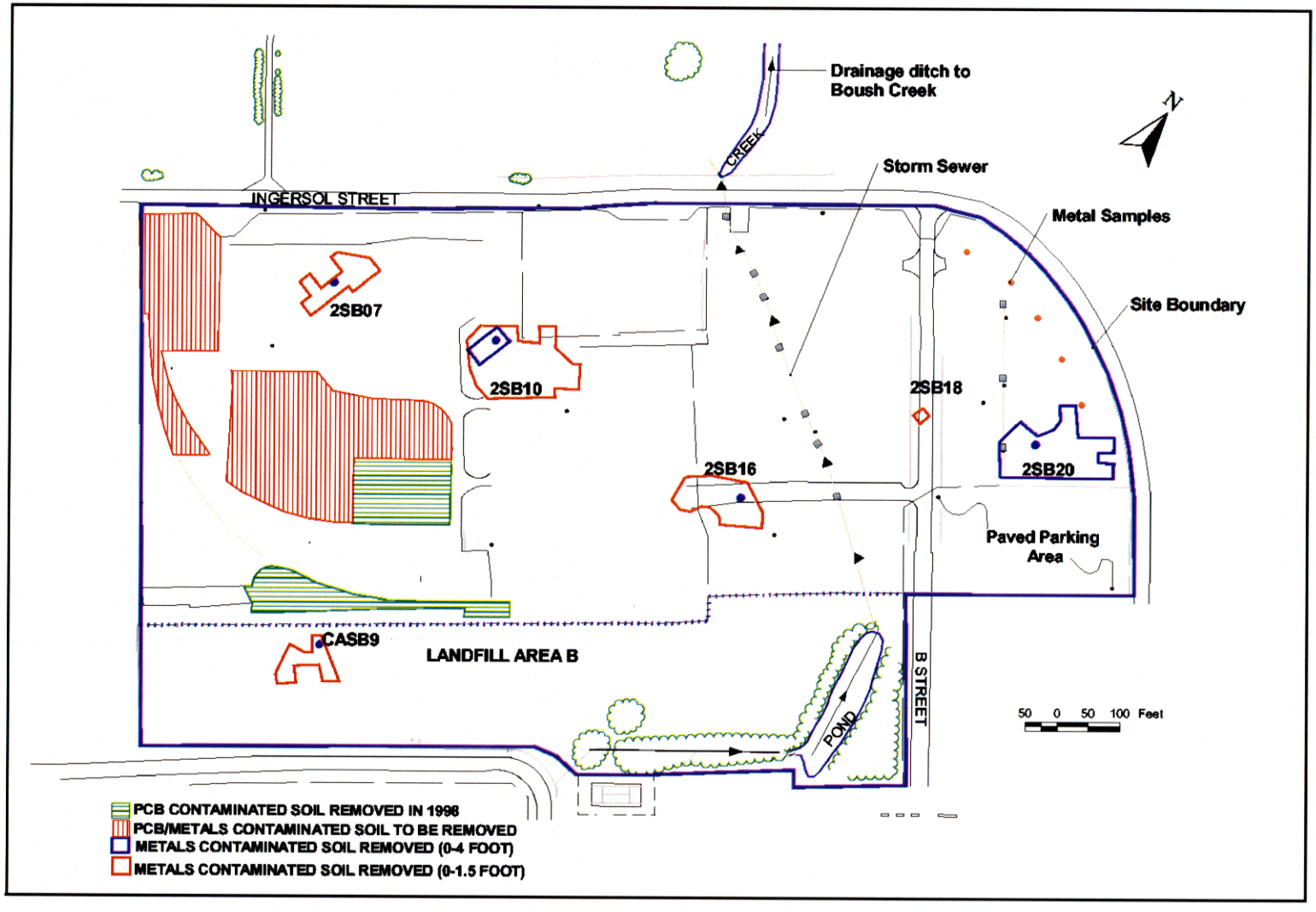
CASY Remedial Timeline

- 2001 - Hot Spot areas of metal and PCB-contaminated soils identified, removed
  - More than 13,300 cubic yards of soil removed from site
- 2001 - Cleanup goals revised to reflect contamination distribution, planned future use of the site

CASY - Current Status

- Soils
  - PCB-contaminated soils removed
  - Initiated Metals Soils Removal
  - Non-time Critical Action for remaining metals contamination
- Sediments
  - Pose no threat to human health
  - Potential source of contamination for ecological receptors in Bousch Creek
  - Planned Source Removal
- Groundwater
  - addressed by CAL treatment plant

CASY Site Status - 2002



CASY Contaminants of Concern

Soil Contaminant	Maximum Concentration Remaining (ppm)	NSN Background Concentration (ppm)	CASY Cleanup Goals* (ppm)
PCBs	None	None	2 (surface soils) 5 (subsurface soils)
Antimony	137	1.2 - 2.9	73
Arsenic	34	1.3 - 42.2	58
Iron	156,780	638 - 96,600	56,000
Lead	5,268	2.3 - 144	400

* Cleanup goals derived to provide acceptable protection to human health

Non-Time-Critical Action

- 2001 - Engineering Evaluation/Cost Analysis (EE/CA)
  - Addresses remaining metals-contaminated soils
  - Summarizes studies, investigations, and performs an evaluation of alternatives
  - Presents the preferred action to the public as required by CERCLA and the National Oil and Hazardous Substances Pollution Contingency Plan
- 2002 - Action Memorandum
  - Provides a concise written record of the action decision
  - Will be in Administrative Record at Kirn Memorial Library

Non-Time-Critical Action

- Action Objective:
  - Minimize potential risks to public health and the environment associated with the remaining metals-contaminated soil at the CASY, Site 22
- Alternatives evaluated based on:
  - Effectiveness
  - Implementability
  - Cost

Preferred Action

- On-Site Containment
  - Installation of a one-foot soil cover over the entire 22-acre site
    - 24,000 cubic yards of fill
    - 12,000 cubic yards of topsoil
  - Erosion and sedimentation control
  - Landscaping
  - Inspections/Maintenance

Preferred Action

- Minimizes infiltration of rainwater
- Reduces potential leaching and contaminant migration
- Minimizes human and ecological exposures
  - Ingestion
  - Inhalation
  - Dermal contact

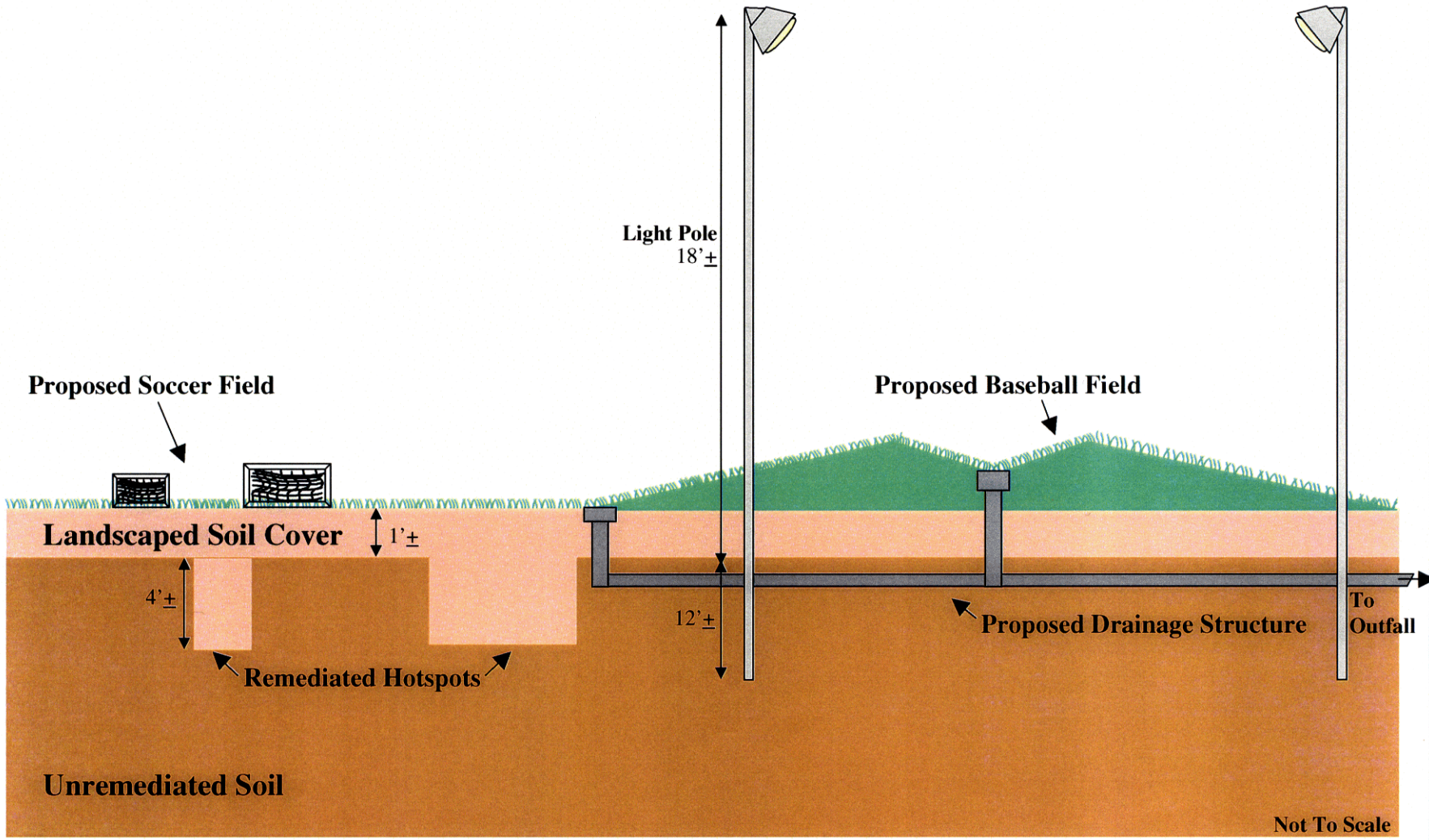
CASY Sediments & Groundwater

- 2002 - Proposed Remedial Action Plan
  - Pond Sediments
    - Excavation and removal, off-site disposal
    - Eliminates potential impacts to groundwater, surface water, Bousch Creek ecology
  - Groundwater
    - On-going Camp Allen Landfill groundwater remedial action, monitoring program, land-use controls
    - Ensures continued protection of human health and the environment

CASY Future Use

- Relocation of Navy Fleet Recreational Park ballfields to the CASY
- VDOT I-564 Intermodal Connector Project
- Current plans also include soccer fields and other recreational facilities

CASY Conceptual Use with Cover



CASY Timeline

- Final EE/CA scheduled for January 2002
  - Followed by Public Comment Period and Action Memorandum
  - Soil Cover scheduled for Spring, 2002
- Sediment & Groundwater PRAP scheduled for Spring, 2002
- CASY Record of Decision Document scheduled for Summer, 2002

Community Involvement Opportunities

- The Administrative Record is available at Kirn Memorial library
- A 30-day public comment period is required for the EE/CA
- Navy, USEPA, VDEQ may modify preferred remedies based on public comments
- Public comment period and public meeting will be scheduled for PRAP addressing sediments and groundwater

Community Involvement Contacts

Commander, Atlantic Division
Naval Facilities Engineering Command
1510 Gilbert Street (Bldg. N-26)
Norfolk, VA 23511-2699
Attention: Remedial Project Manager,
Ms. Winoma Johnson
(757) 322-4587

Commander, Atlantic Division
Naval Facilities Engineering Command
1510 Gilbert Street (Bldg. N-26)
Norfolk, VA 23511-2699
Attention: Public Affairs Officer,
Mr. John E. Peters
(757) 322-8005

Remedial Project Manager
USEPA, Region III (3HSI3)
1650 Arch Street
Philadelphia, PN 19103
Attention: Ms. Mary Cooke
(215) 814-5129

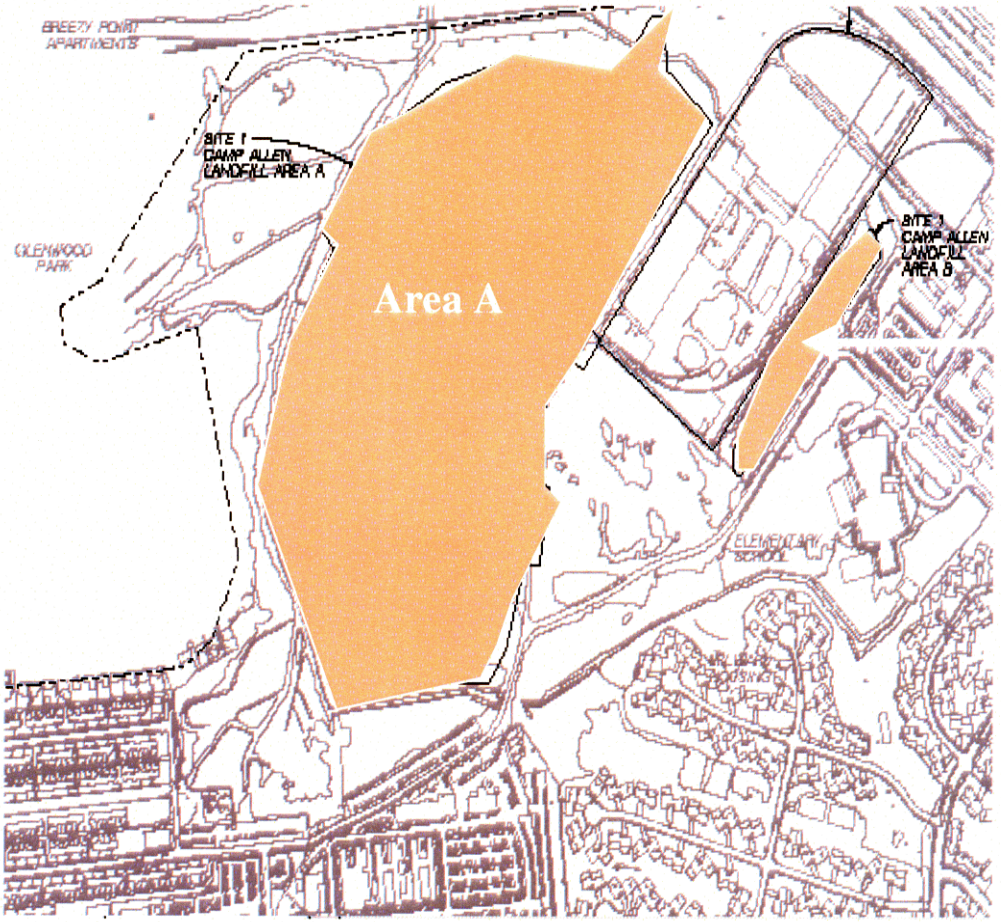
Virginia Dept. of Environmental Quality
Federal Facilities Program
629 East Main Street, 4th Floor
Richmond, VA 23240-0009
Attention: Mr. Devlin Harris
(804) 698-4226

Camp Allen Landfill

- 45 Acre Landfill used in the 1940s for disposal of drums, sludges
- Drums removed in 1994
- Groundwater remediated for VOCs and metals

IR Site 1- Camp Allen Landfill

Site Map



IR Site 1- Camp Allen Landfill
Background

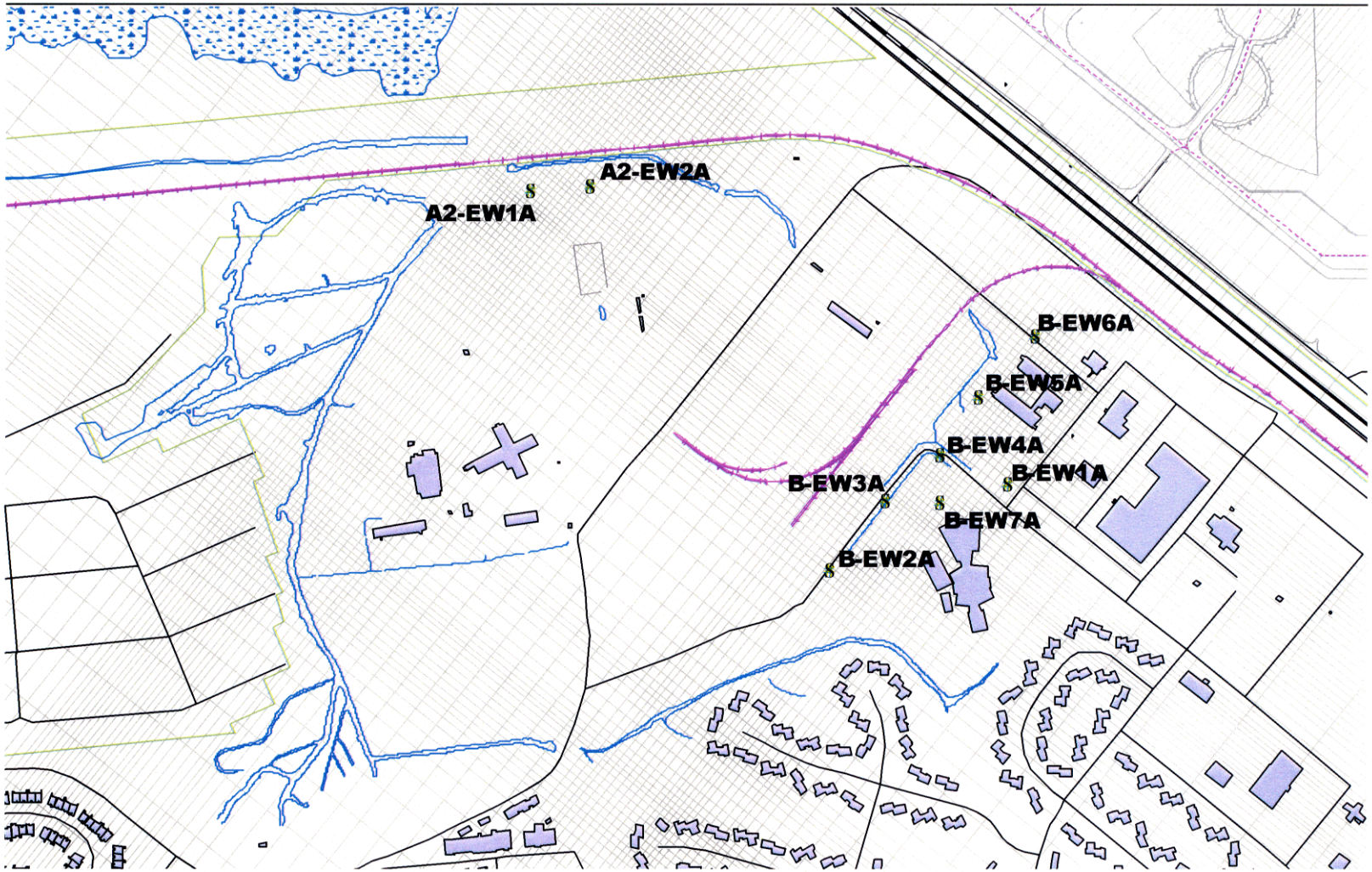
- Consists of 2 Areas
  - Area A : 45 Acre Landfill (Mid 40's disposal of Metal Plating & parts Cleaning Sludges, Paint Stripper Residue, Incinerator Ash)
  - Area B: 2 Acre (1971- Wastes from Camp Allen Salvage Yard fire, including Drums, were Buried)
- RI/FS Completed in 1994
- Volatile Organic Compounds (VOCs) and Metals Detected in all media (Soil, Sediment, Surface & Ground Water)
- Primary Source of Contamination (Drums) Removed from Area B in 1994

IR Site 1- Camp Allen Landfill

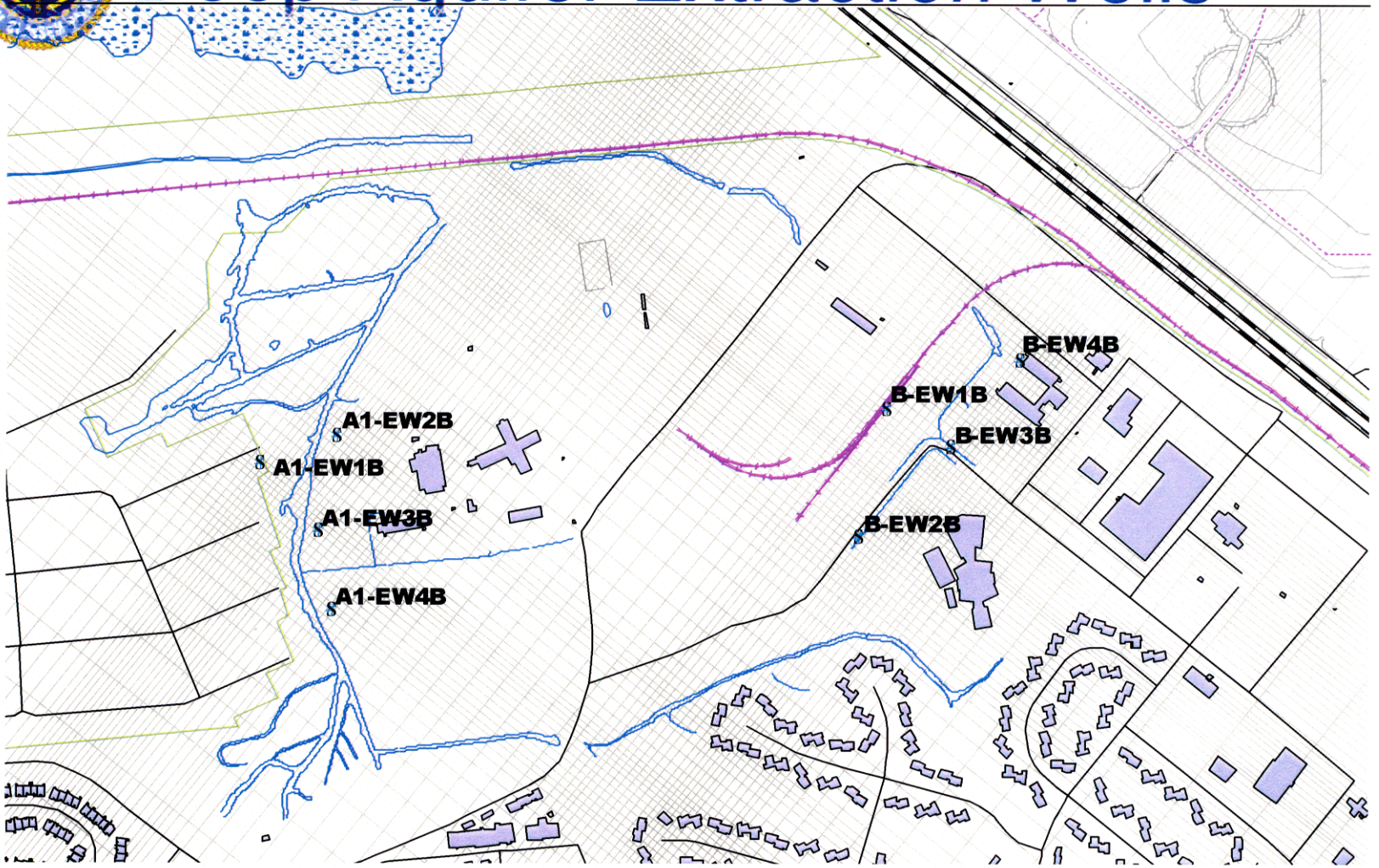
IR Status

- Treatment System is being used for Hydraulic Control of Contaminated Groundwater Plume
  - 49 monitoring wells
  - Residential Area nearby; Vinyl Chloride previously detected in well outside Camp Allen property
  - Since Plant has been operational, well has been Non-detect for Vinyl Chloride
- Treatment System Reducing Mass of VOC Concentration In Groundwater (over 300 pounds removed)

Shallow Aquifer Extraction Wells



Deep Aquifer Extraction Wells



Remedial Action Objectives

- Prevent exposure to contaminated groundwater
- Prevent further migration of contaminated groundwater (containment)
- Restore contaminated aquifers
  - Risk-based cleanup goals for shallow aquifer
  - MCL cleanup goals for deep aquifer
  - If asymptotic levels are reached cleanup goals can be re-evaluated

Groundwater Cleanup Goals (in ug/L)

Contaminant	Deep Aquifer	Shallow Aquifer
Vinyl Chloride	2	9
1,2-Cis DCE	70	15,000
TCE	5	1,600
1,2-DCA	5	190
1,1,1-TCA	200	13,500
Perc.	5	340

Treatment System Performance

- Operating at 60% of treatment capacity
- Consistently meeting effluent requirements
- Carbon Adsorption for "polishing" as air stripping is removing VOCs
- Metals and solids removal is necessary from shallow aquifer groundwater

Groundwater Analytical Results - Area A

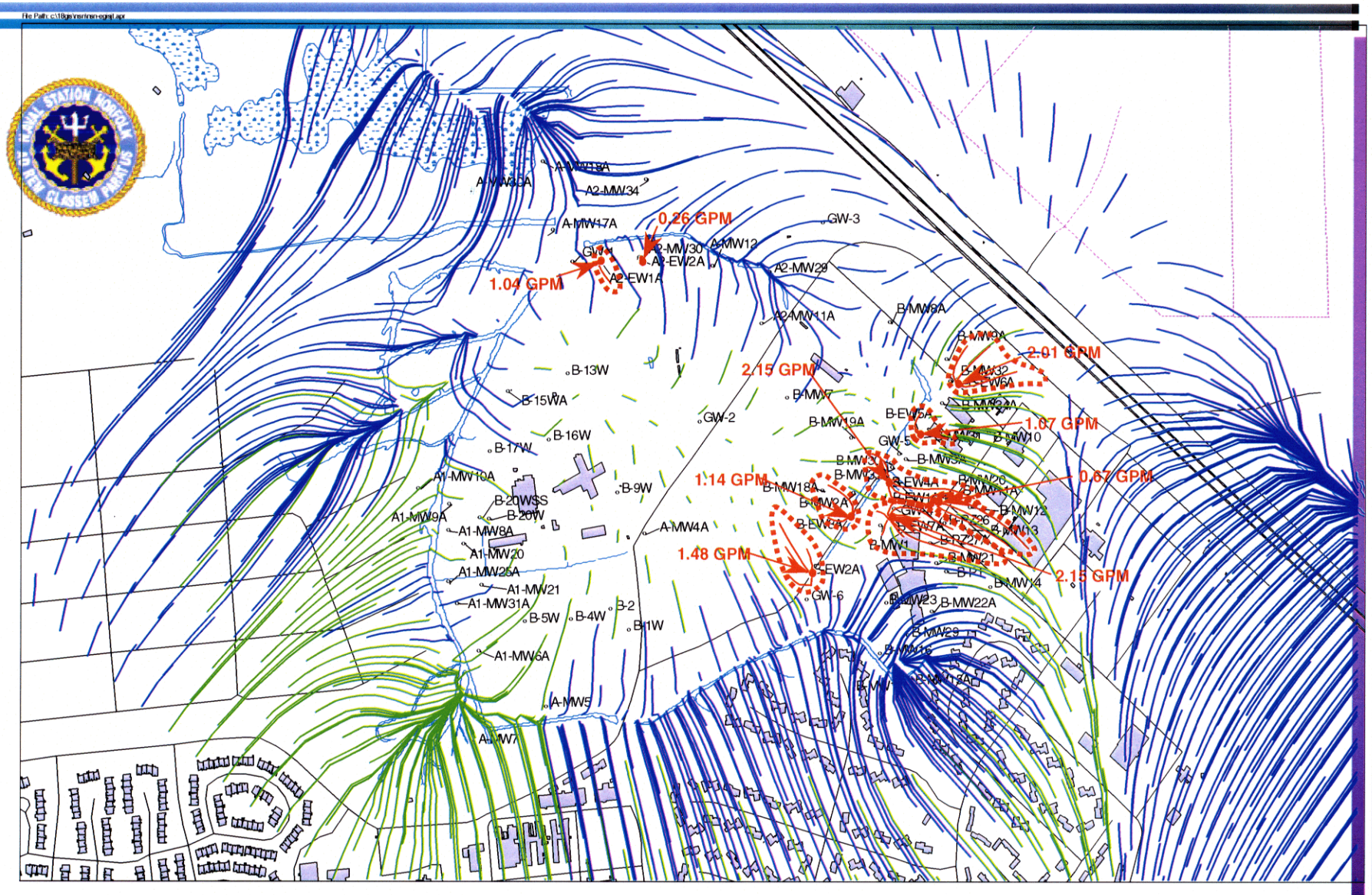
- Concentrations in four sentinel wells near residential below MCLs
- Vinyl chloride slightly above cleanup level in shallow aquifer at two wells
- VOCs in deep aquifer, northwest of landfill and)and at landfill boundary above cleanup levels

Groundwater Analytical Results - Area B

- VOCs elevated in shallow aquifer in vicinity of only five wells
- VOCs elevated in deep aquifer in vicinity of Area B fill area
- Concentrations have not shown significant decrease since pumping began in 1998 - but only 3 rounds of sampling collected.

Groundwater Modeling Objectives

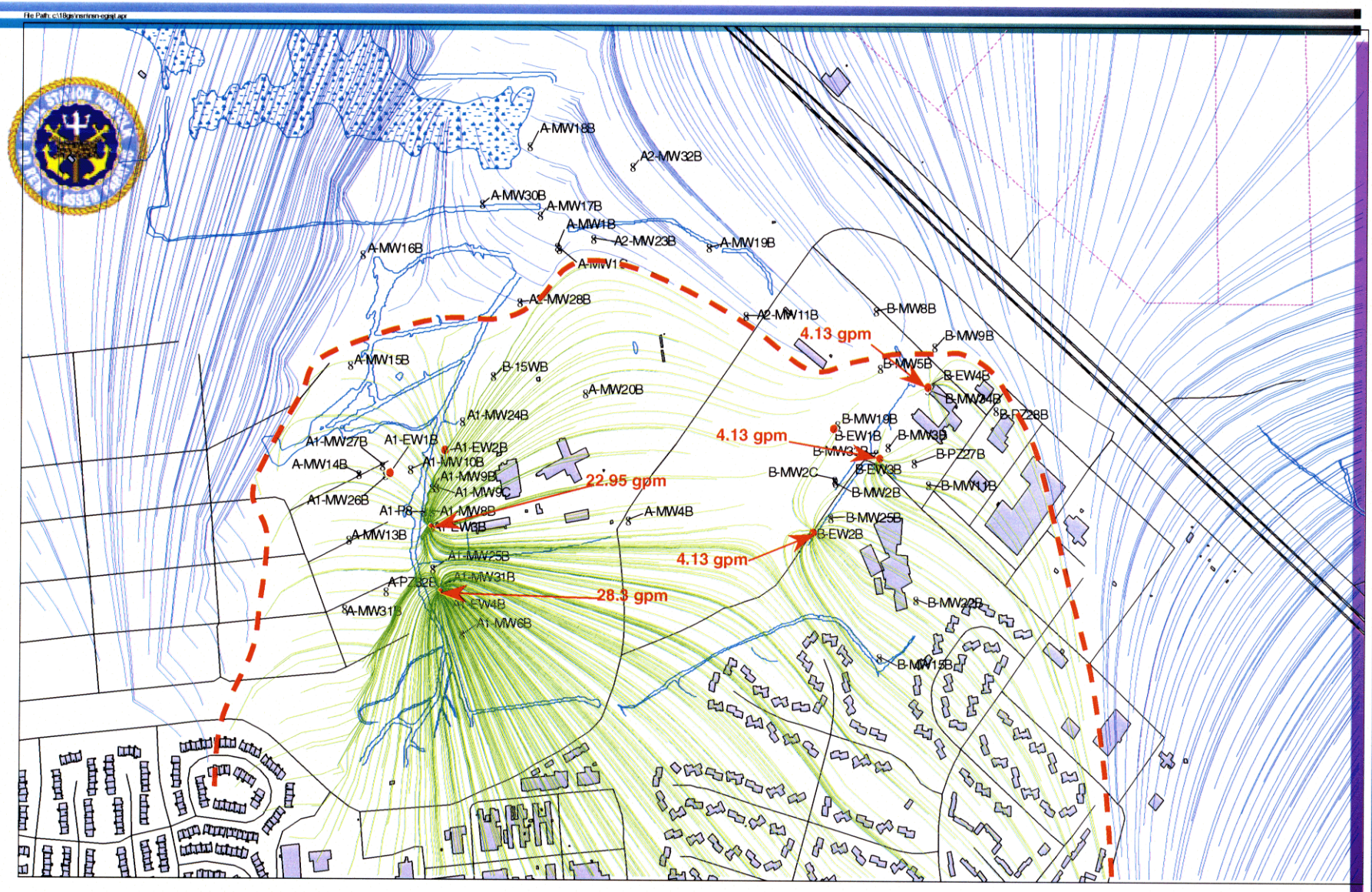
- Use a 3-D groundwater flow model to evaluate the hydraulic containment effectiveness of the existing pumping system
- Evaluate vertical flow between aquifers
- Evaluate potential new pumping rates or well locations



Flow Lines and Capture Zones in Layer 1,
Layer 1 Extraction Wells Pumping 12 gpm

Conclusions of Groundwater Modeling - Shallow Aquifer

- Shallow extraction wells in Area A are capturing a small area of VOC plume
- Four shallow extraction wells in Area B are capturing only part of VOC plume.
- Significant interconnection between aquifers



Flow Lines and Capture Zones in Layer 2,
Layer 2 Extraction Wells Pumping 64 gpm

Conclusions of Groundwater Modeling - Deep Aquifer

- While containment is achieved in most of Area A and Area B, pumping rates can be reduced to maintain gradient reversal from residential areas

- Containment extends beyond the extent of the landfill in both Areas A & B

SWMU 14
Q-50 Satellite Accumulation Area

SWMU 14 Q-50 Satellite Accumulation Area

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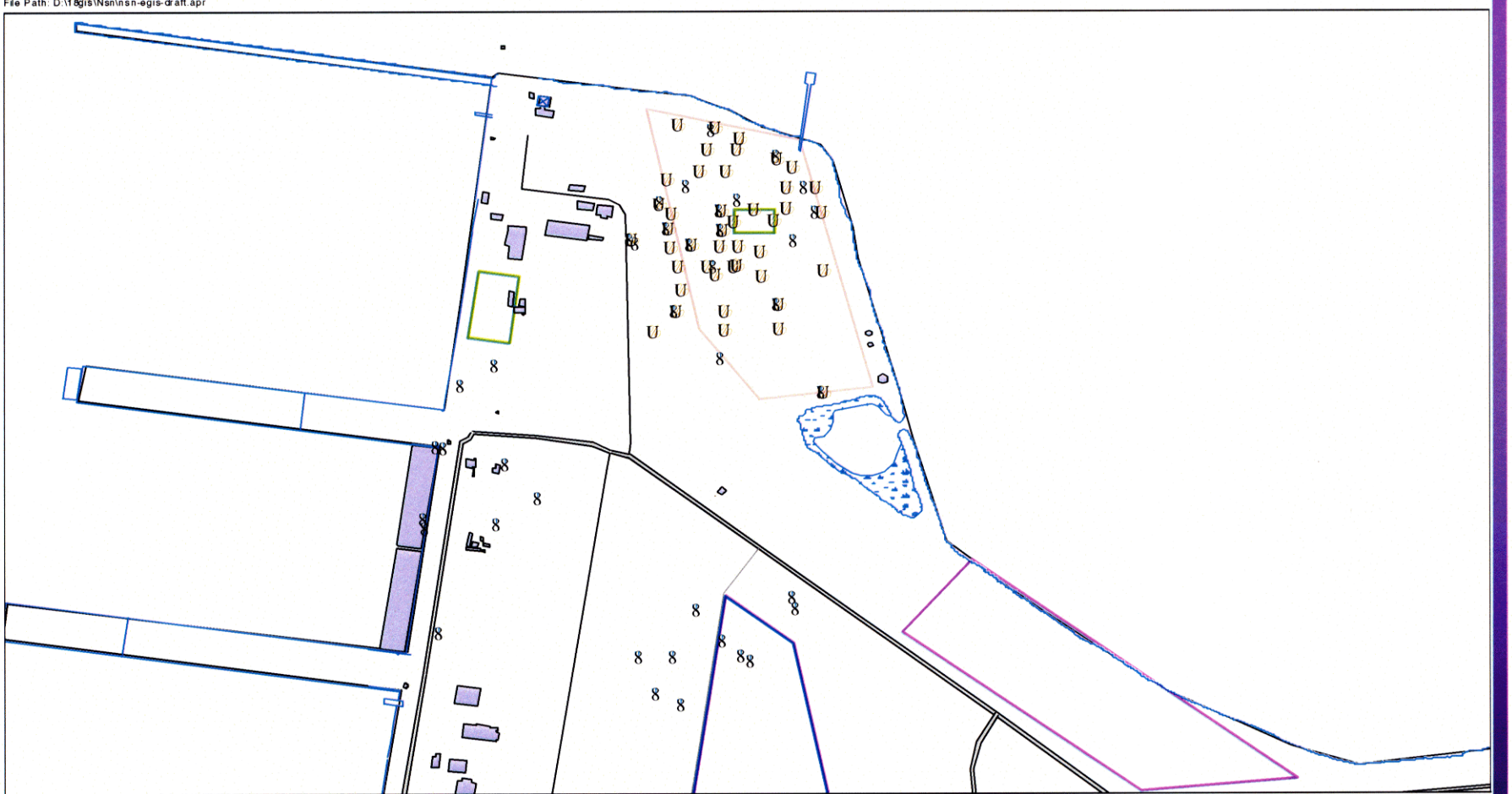

SWMU 14 - Background

- Former 90-day hazardous waste accumulation area
- Also used for temporary stockpiling of RR ties and metal debris
- Investigation Summary:
  - Phase I RRR Study - 1996
  - Phase II RRR Study - 1996
  - Supplemental Investigation - 1998
  - Phase I Remedial Investigation - 1999
  - Geophysical Survey - 2000
  - Phase II/ Remedial Investigation - 2001

SWMU 14 Summary of Soils Investigations

- Surface and subsurface samples collected at over 35 locations
- Contaminant detected above risk-based screening levels included:metals,PCBs, volatile organics (petroleum and solvents), SVOCs, dioxin.
- Most metals except iron and lead appear to be within background levels
- Soil borings delineated extent of fill area

SWMU 14- Summary of Groundwater Investigations

- 18 Groundwater monitoring wells installed
- Groundwater flows north/northwest towards Willoughby Bay
- Contaminant detected above risk-based screening levels included:metals,volatile organics (petroleum and solvents)

SWMU 14- Proposed activities for 2002

- Sample pond sediments to the southeast of site
- Conduct human heath and ecological risk assessments
- Complete Remedial Investigation and Feasibility Study
- Based on results of risk assessments consider EE/CA